

What I claim is:

1. A filter material having a composition comprising,  
a fused mixture of particulate of predetermined sizes of powder ultra high molecular  
weight polyethylene, low density polyethylene, and high density polyethylene,  
5 said material having evenly distributed interstice openings of substantially equal size and  
extending from one surface to an opposite surface.

2. A filter material composition according to Claim 1 including particulate of filler  
material powder chosen from the group consisting of : active carbon, polytetrafluoroethylene,  
salt, and an alkaline.

10 3. A filter material composition according to Claim 2 having  
1 portion in proportion by volume of ultra high molecular weight polyethylene powder  
having a particulate size of 10 to 15 micrometer,  
0.15 to 0.4 portion in proportion by volume of low density polyethylene powder having  
a particulate size of 0.15 to 0.4 micrometer,  
15 0.05 to 0.15 portion in proportion by volume of high density polyethylene powder having  
a particulate size of 10 to 15 micrometer, and  
2.5 to 4.0 portion in proportion by volume of active carbon powder having a particulate  
size of approximately 20 micrometer.

4. A filter material composition according to Claim 2 having  
20 1 portion of in proportion by volume of ultra high molecular weight polyethylene  
powder having a particulate size of approximately 10 micrometer,  
0.1 to 0.2 portion in proportion by volume of polytetrafluoroethylene powder having a

particulate size of approximately 15 micrometer,

0.05 to 0.1 portion in proportion by volume of high density polyethylene powder having a particulate size of approximately 15 micrometer,

5 0.03 to 0.08 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 15 micrometer,

0.05 to 0.1 portion in proportion by volume of alkaline powder having a particulate size of approximately 10 micrometer, and

0.1 to 0.2 portion in proportion by volume of polyphenylene oxide powder having a particulate size of approximately 15 micrometer.

10 5. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder having a particulate size of 20 to 30 micrometer,

0.10 to 0.20 portion in proportion by volume of high density polyethylene powder having a particulate size of approximately 25 micrometer,

15 0.03 to 0.08 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 25 micrometer,

0.05 to 0.15 portion in proportion by volume of polytetrafluoroethylene powder having a particulate size of approximately 25 micrometer,

20 0.05 to 0.15 portion in proportion by volume of polyamide powder having a particulate size of approximately 25 micrometer,

0.15 to 0.3 portion in proportion by volume of alkaline powder having a particulate size of approximately 20 micrometer, and

0.10 to 0.25 portion in proportion by volume of salt powder having a particulate size of approximately 25 micrometer.

6. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder  
5 having a particulate size of approximately 40 micrometer,

0.10 to 0.2 portion in proportion by volume of high density polyethylene having a  
particulate size of approximately 40 micrometer,

0.03 to 0.08 portion in proportion by volume of low density polyethylene having a  
particulate size of approximately 40 micrometer,

10 0.05 to 0.15 portion in proportion by volume of polypropylene powder having a  
particulate size of approximately 40 micrometer,

0.05 to 0.15 portion in proportion by volume of polyamide powder having a particulate  
size of approximately 40 micrometer,

15 0.15 to 0.3 portion in proportion by volume of alkaline powder having a particulate size  
of approximately 20 micrometer, and

0.10 to 0.25 portion in proportion by volume of salt powder having a particulate size of  
approximately 40 micrometer.

7. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder  
20 having a particulate size of approximately 25 micrometer,

0.10 to 0.25 portion in proportion by volume of high density polyethylene powder having  
a particulate size of approximately 30 micrometer,

0.15 to 0.35 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 30 micrometer,

2.5 to 4.0 portion in proportion by volume of active carbon powder having a particulate size of approximately 20 micrometer, and

5           0.05 to 0.15 portion in proportion by volume of alkaline powder having a particulate size of approximately 20 micrometer.

8.       A process of making a high efficiency filter material comprising the steps of:

          mixing a powder mixture of ultra high molecular weight polyethylene, high density polyethylene, low density polyethylene all having predetermined particulate sizes,

10       placing and compacting said powder mixture in a refractory mold having a predetermined molded shape,

          heating said mold in a heating oven to a temperature of 160 °C to 320 °C for 30 to 90 minutes to fuse the mixture to an elastic porous material.

9.       A process according to Claim 8 including the step of removing said mold with said  
15       elastic material therein from said heating oven,

          immersing said mold with said elastic material therein into a cold water bath , and  
          removing said elastic material from said mold.

10.      A process according to Claim 9 including immersing the elastic material in water for a further period of 2 to 4 hours.

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